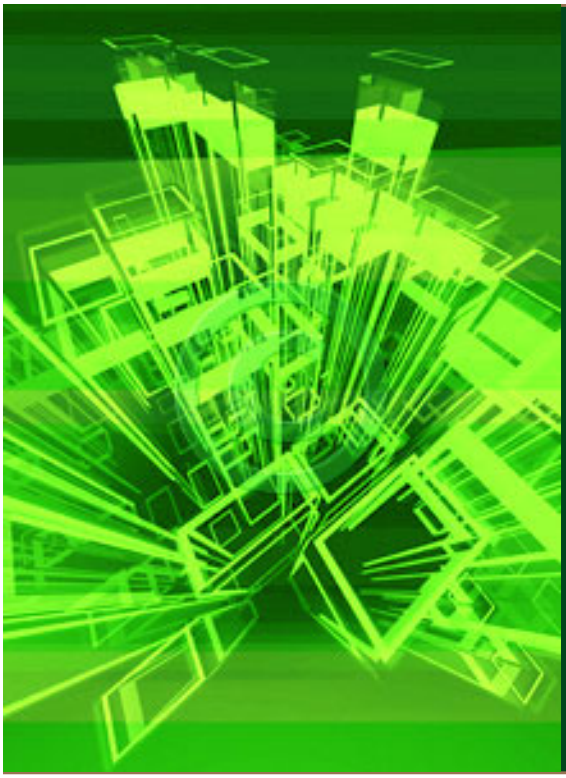

2001 Maryland Green Building Council

High Efficiency Green Buildings Program

Parris N. Glendening
Governor

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Lt. Governor

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MARYLAND GREEN BUILDINGS COUNCIL
"HIGH EFFICIENCY GREEN BUILDINGS PROGRAM"
November 1, 2001

A. INTRODUCTION

A.1 A Brief history and overview of Executive Order 01.01.2001.02 -- Sustaining Maryland's Future with Clean Power, Green Buildings and Efficient Energy.

On March 13, 2001, The Executive Order was signed by Governor Parris N. Glendening establishing the Maryland Green Buildings Council. The Council, in turn, established the High Efficiency Green Buildings Program. The Program requires that eligible buildings constructed by the State shall meet minimum standards of efficiency based on the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System. Maryland is the first state to officially adopt the LEED system standards to its building projects.

A.2 Building "Green"

"Green Building" is a philosophy of building design and construction which incorporates the following concepts: using natural resources efficiently; considering the impact of buildings on the local, regional, and global environment; reducing building footprint size; allowing ecosystems to function naturally; conserving and reusing water; treating stormwater on site; maximizing the use of local materials; optimizing energy performance by installing energy efficient equipment and systems; optimizing climatic conditions through site orientation and design; integrating natural day lighting and ventilation; minimizing the use of mined rare metals and persistent synthetic compounds; and minimizing construction waste by reducing, reusing and recycling materials during all phases of construction and deconstruction. "Green Building" design is an integrated, collaborative, team oriented process fundamentally advanced over the current state of building design.

A.3 The Program

The High Efficiency Green Buildings Program was written for the use of all State of Maryland agencies which design and build facilities or which prepare programs and budgets for the design and construction of their facilities. It is intended specifically for the use of project managers, capital planners and the professionals who will design state owned facilities. Section B describes compliance requirements for all state owned and leased facilities and provides additional information which should be considered by state agencies in the planning of their proposed facilities. Attachment B-a describes the requirements for design professionals engaged in the design of state facilities. These will also be included in the Department of General Services' Procedure Manual for Professional Services. Other agencies engaged in the design and construction of state facilities should provide this program to their design professionals. Attachment B-b provides suggested additions to Requests for Proposals (RFP) for state projects. Attachment B-c, reproduced with the permission of the US Green Building Council, provides the LEED™ Green Building Rating System Version 2.0 in its entirety. A companion volume, the LEED™ *Reference Guide June 2001 Edition* is available from the US Green Building Council (www.usgbc.com).

The High Efficiency Green Buildings Program will be reviewed on a yearly basis by the Maryland Green Buildings Council and revised as needed to address issues which may occur as this new way of constructing state facilities evolves. The LEED™ rating system is on a regular basis with the next revision anticipated to be released in March of 2005. Projects shall comply with the latest version in use at the time of the start of design. For all questions concerning this program or for information on registering your project with the LEED™ program, contact:

Maryland Green Buildings Council
c/o Department of General Services - Office of the Secretary
301 West Preston Street - Room 1401
Baltimore, Maryland 21201
(410) 767-4938

B. GREEN DESIGN AND CONSTRUCTION CRITERIA

The following criteria shall be applied to all State owned and leased projects funded for design in FY 2002 and beyond which have not yet initiated the Request for Proposal for the selection of an Architectural and Engineering consultant. All projects currently in design under previous funding shall not be required to meet these criteria. However, these projects shall be reviewed by their project teams, and reasonable efforts shall be made to incorporate Green Building principles where practical.

B.1 Criteria and Standards

1. All new buildings designed and constructed by State agencies and owned by the State shall meet or exceed the current version of the U.S. Green Building Council's LEED™ Green Building Rating System Silver rating. Wherever possible, projects shall strive for the LEED™ Gold rating. These projects shall be certified through the LEED™ certification process. Projects which will be required to be LEED™ Silver certified include all new construction projects larger than 7,500 gross square feet, with the exception of building types listed in Item 6 below.

2. All total renovations of existing buildings designed and constructed by State agencies and owned by the State or leased by the State from a private developer or landlord shall meet or exceed the current version of the U.S. Green Building Council's LEED™ Green Building Rating System Silver rating. Wherever possible, projects shall strive for the LEED™ Gold rating. These projects shall be certified through the LEED™ certification process. Projects which are required to be LEED™ Silver certified include all projects larger than 7,500 gross square feet with the exception of building types listed in Item 6 below. A total renovation is defined as a renovation in which the building shell (exterior walls, floors and roof) will be reused for the new construction. In total renovation projects, existing HVAC, electrical, and plumbing systems are to be replaced.

3. All interior renovations of existing State owned buildings, or interior renovations of portions of privately owned buildings to be leased by the State, shall meet or exceed the U.S. Green Building Council's LEED™ Green Building Interiors Rating System Silver rating. Wherever possible, projects should strive for the LEED™ Gold rating. (**Note**: At this time, the LEED™ Commercial Interiors rating system is being finalized. Projects shall use a draft version to be designated by the Green Building Council prior to the public release of this program in March 2003.) These projects shall be certified through the LEED™ certification process. Projects which are required to be LEED™ Silver certified include all projects which are larger than 5,000 net programmed square feet and which are to be designed by a licensed design professional. The building types listed below in Item 6 are not included.

4. All projects which are required to be LEED™ certified are encouraged to exceed the LEED™ Silver rating where possible.

5. All new projects of the types described above which are less than the required square footage shall have as a design goal the LEED™ Silver rating. However, projects in this category are not required to be LEED™ Silver certified. The project design professional shall submit a final report describing the building's "Green" features. See Attachment B-a Directions for Design Consultants.

6. All projects as described in Items 1 thru 3 above, and of the building types listed below, or similar building types (which are essentially unoccupied), are not required to be LEED™ Silver certified. However, the design of such facilities shall employ applicable Green Building principles wherever practical in their design and construction using the LEED™ Silver rating as a goal. The project design professional shall submit a final report describing the building's "Green" features. See Attachment B-a Directions for Design Consultants.

A. Warehouse /Storage Facilities
B. Garages
C. Maintenance Facilities
D. Transmitter Buildings
E. Pumping Stations
F. Similar Approved Building Types

7. The following is a list of LEED™ System credits which are mandatory for all projects which are required to be LEED™ Silver certified. Requirements for some of these credits may be mandatory under other State programs.

Sustainable Sites
1. Reduced Site Disturbance (1 point minimum)
2. Stormwater Management (1 point minimum)
3. Light Pollution Reduction
Water Efficiency
1. Water Use Reduction
Energy and Atmosphere
1. Optimize Energy Performance (minimum 2 points)
Materials and Resources
1. Construction Waste Management (1 point minimum)
2. Certified Wood
Indoor Environmental Quality
1. Increase Ventilation Effectiveness
2. Daylight and Views
3. Low Volatile Organic Compounds (VOC) Emitting Materials

B.2 Directives to State Agencies

1. Sites for eligible projects shall be selected in accordance with LEED™ criteria and Smart Growth principles. Sites shall be reviewed by the Department of Planning's Property Clearing House prior to final selection.

2. For special projects which may be desired by the agency to meet a Gold or Platinum LEED™ rating, the State agency shall identify this requirement and anticipated additional design and construction costs as early as possible in the Capital Budget cycle.

3. All projects which are required to be LEED™ Silver certified shall be registered and certified using the State of Maryland's U.S. Green Building Council membership.

4. Provide space allocation for recycling activities in all new building programs.

5. Basic building commissioning is a pre-requisite for LEED™ certification. Please include additional costs for commissioning in all Capital Budget requests for buildings required to be LEED™ certified.

B.3 ATTACHMENTS

Attachment B-a	Directions for Design Consultants
Attachment B-b	Request for Proposals -- Suggested Additions
Attachment B-c	USGBC LEED™ Green Building Rating System Version 2.0

Attachment B-a: DIRECTIONS FOR DESIGN CONSULTANTS

1. The prime design consultant shall designate an individual to serve as the Green Building Coordinator (GBC) for the project. The Coordinator may be a member of the prime firm, a consulting individual, or a firm licensed to practice architecture or engineering in the State of Maryland. The GBC shall be responsible for facilitating and coordinating all related Green Building activities and shall have either performed previous LEED™ System certifications or shall adequately demonstrate the knowledge necessary to perform the work necessary to obtain a LEED™ Certification. The GBC must be approved by the State during the A/E selection process.

2. The design of all projects required to be LEED™ certified shall employ an integrated design approach. Prior to the start of design, the design consultant's Green Building Coordinator shall conduct a Green Building pre-design meeting with all consultant team members, the State project manager and members of the using agency team to establish the direction and scope of Green Building principles, including construction and maintenance procedures, to be employed in this project to attain the LEED™ Silver rating. These principles shall be recorded in writing as the "Green Building Plan" (GBP). The Green Building Plan shall be updated and submitted for review at each design phase to track any changes, modifications or additions. The A/E shall provide 3 copies of the GBP at the conclusion of the project. One copy for the project file, one copy to the building user and one copy to the Maryland Green Building Council. The GBP shall include two sections. The narrative first section shall follow the format of the LEED™ Green Building Rating System. All official LEED™ interpretations shall be included in this section. The second section shall include the Life Cycle Cost Analysis described in item 4 below.

3. The A/E shall develop and provide a "Green Building Operations and Maintenance Manual" outlining operation and maintenance procedures and schedules for all materials and systems which contribute to the LEED™ Silver rating. This manual is in addition to the usual submission of operating and maintenance manuals and shall focus on system maintenance required to keep green features operating as intended. The intent is to provide system maintenance guidelines as opposed to procedures for maintaining individual pieces of equipment as provided in the equipment operating and maintenance manuals. The manual shall be submitted at the 50% CD phase for review, at the 100% CD submission and after project completion. Refer to Item 10 below for more information on this manual.

4. The consultant shall include as a part of all Green Building Plan submissions, a Life Cycle Cost Analysis which describes costs, both adds and deducts, which are attributed to achieving the LEED™ Silver rating as well as future energy savings attributed to the use of these materials and systems. For example, identify the additional cost attributed to using more expensive efficient glazing and identify the savings attributed to smaller HVAC units made possible by using the more efficient glazing. Identify projected savings in energy usage and costs to be realized due to this strategy. Future repair, maintenance, and replacement costs shall be included as well. Required energy modeling studies shall be included in this section.

5. All projects required to be LEED™ Silver rated shall be commissioned. The State shall employ, from the start of design, an approved commissioning agent to monitor and verify the design, construction and operation of mechanical, electrical, and plumbing systems. The design consultant shall cooperate as needed with the commissioning agent.

6. The design consultant shall identify and bring to the attention of the State Project Manager in writing any conflicts between Green Building requirements and other requirements of the State or the project program.

7. The design consultant's Green Building Coordinator shall develop and submit all documentation necessary to the U.S. Green Building Council's LEED™ Program for certification of the project for the LEED™ Silver or higher rating. Typically, the project shall be registered with LEED™ at the start of design. The final LEED™ certification documentation is submitted after completion of construction. The cost of registering the project with LEED™ as well as a reasonable cost for LEED™ interpretations and consultation shall be included in the consultant's price proposal. All projects shall be registered under the State of Maryland's US Green Building Council membership. A copy of the complete LEED™ submission package shall be submitted to the Maryland Green Buildings Council.

8. The design consultant shall provide a specification section which calls attention to special construction issues related to Green Buildings and the LEED™ rating such as construction materials, construction recycling, special demolition considerations, and potential special construction sequencing issues. This section is in addition to the standard specification sections and is intended to clearly call these special issues to the attention of the contractor during the bidding phase.

9. Reporting

A. For projects which are required to be LEED™ Silver certified, the A/E shall submit one final copy of the LEED™ Certification Submission, stamped and signed with A/E's license stamp, the official LEED™ Certificate, the final Green Building Plan and the Green Building Operations and Maintenance Manual to:

Maryland Green Buildings Council
c/o Department of General Services - Office of the Secretary
301 West Preston Street, Room 1401
Baltimore, Maryland 21201

B. For projects which are not required to be LEED™ Silver certified, the A/E shall submit a narrative report describing the green elements of the projects. Using the LEED™ score sheet, the A/E shall provide a brief description for each available credit describing how that credit was addressed or an explanation of why it was not addressed. The narrative shall be submitted to the project manager and one copy shall be sent to the address listed above.

10. The Green Building Coordinator shall review the project and develop the Green Building Operation and Maintenance Manual based on the green features and operations of each particular building. The manual shall be submitted in addition to the usual Operations and Maintenance Manuals (O&M) typically provided. It should not include maintenance of equipment (pumps for example), which are a part of a "Green Building" system. That information should be provided in the typical O&M manual. In other words, a comprehensive manual of any and all recommendations for maintenance and operations with the specific goal of maintaining green and energy efficient building operations for the life of the building. Examples of the types of information to be provided include, but are not limited to, the following:

A. recommendations on periodic duct inspection or cleaning as well as HVAC filter changes to maintain indoor air quality (IAQ).
B. recommended cleaning materials and cleaning schedules for finishes (especially for "green materials") considering IAQ and extending the life of the material (if the material lasts longer, it doesn't have to be replaced or put in a landfill).

C. information on minimum paint reflectance for repainting interior areas using reflected day lighting.
D. a list of the low VOC paint products and colors used.
E. schedule recommendations for cleaning of glass and light shelves to maintain reflectance and light transmission for daylighting systems.
F. operation recommendations for HVAC systems (these should be available from the commissioning report)
G. a schedule for inspecting and cleaning walk-off mat recesses to maintain IAQ.
H. recommendations for eco-friendly pest control
I. maintenance recommendations for "living roof" plantings.
J. provide a list of local sources for recycling used material such as carpet, ceiling panels and drywall.
K. provide a list of the recyclable materials used in the building.
L. provide a list of the manufacturers and suppliers of green materials used in the building.
M. provide a list of proper lamps (high efficiency/ long life light bulbs) for replacement.
N. provide a list of sources of recycled paper products (toilet paper and paper towels) and eco friendly cleaning products.
O. provide a simple list of instructions for building occupants emphasizing the use of the building's green features such as the purpose of walk-off mats and how to use composting toilets as well as simple instructions such as turning out lights, locations of recycling stations, use of individual HVAC controls, water use reduction methods and other green practices.

Schedule items might be organized in a one year calendar format. This information can be collected as the project progresses with the hope of simplifying the effort at the end of the project. The manual shall be prepared in a 3 ring binder format to allow for convenient reproduction.

Attachment B-b: REQUEST FOR PROPOSALS -- SUGGESTED ADDITIONS

The following items are suggested as additions to Requests for Proposals for Architectural and Engineering (A/E) Services for Green Building projects and for projects which are not required to be LEED™ Silver certified. Items should be edited as needed for each specific project.

1. Green Building Projects required to be LEED™ Silver certified.

A. On March 13, 2001, The Green Power and Energy Efficient Executive Order was signed by Governor Parris N. Glendening establishing the Maryland Green Buildings Council. The Council, in turn, established the High Efficiency Green Building Program. The Program requires that eligible buildings constructed by the State shall meet minimum standards of efficiency based on the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System.

B. This project shall be required to be LEED™ Silver (or higher, if desired by Using Agency) certified.

C. Refer to Attachment B-a of the Maryland Green Building Council's High Efficiency Green Building Program for requirements.

D. Submitters shall provide with their proposal the name of the Green Building Coordinator as required by the High Efficiency Green Building Program. The Green Building Coordinator may be a member of the A/E firm or a consulting individual or firm licensed as an architect or engineer in the State of Maryland. Submit a complete resume describing specific experience and qualifications that will demonstrate the ability to perform the work specified as Green Building Coordinator. Provide descriptions of recent and relative experience in directing environmentally responsible design and construction. Provide a list of projects on which this individual has performed a similar role. State whether the prime A/E firm has worked with this consultant previously.

E. Provide descriptions of recent and relative experience by the prime A/E firm as well as the mechanical, electrical and site design consultants in providing design services for environmentally responsible building projects. Provide a list of built and unbuilt projects on which these firms have special related experience.

F. The qualified firm shall include with their Price Proposal an itemized listing of all costs associated with the design and certification of this project as a LEED™ Green Building. These costs shall include, but shall not be limited to, professional fees of the Green Building Coordinator, additional design costs (provide justification) which may be attributed to designing a green building, LEED™ Certification Registration and Documentation, and reimbursable expenses for reproduction of related materials and reports.

2. Projects Which Are Not Required to be LEED™ Silver Certified.

A. On March 13, 2001, The Green Power and Energy Efficient Executive Order was signed by Governor Parris N. Glendening establishing the Maryland Green

Building Council. The Council, in turn, established the High Efficiency Green Building Program. The Program requires that certain buildings constructed by the State shall meet minimum standards of efficiency based on the United States Green Building Council's Leadership in Energy and Environmental Design (LEED™) Green Building Rating System's Silver certification.

B. This project, in accordance with the Maryland Green Building Council's High Efficiency Green Building Program is not required to be Silver certified by the LEED™ system. However, all State projects are encouraged to use Green Building principles in their design with the Silver rating as a goal. The Green Building Program does require project teams for all projects which are not required to be LEED™ Silver certified to report their efforts to the Maryland Green Buildings Council as follows:

For projects which are not required to be LEED™ Silver certified, the A/E shall submit a narrative report describing the "green" elements of the projects. Using the LEED™ score sheet, the A/E shall provide a brief description for each available credit describing how that credit was addressed or an explanation of why it was not addressed. The narrative shall be submitted to the project manager and one copy shall be sent to the Maryland Green Building Council at the following address:

Maryland Green Buildings Council
c/o Department of General Services - Office of the Secretary
301 West Preston Street, Room 1401
Baltimore, MD 21201

C. Proposers are encouraged to submit a brief description in their proposal of their firm's previous experience in the design of Green Buildings, as well as their intentions for pursuing the stated goal for this project for consideration by the qualification committee.

D. The qualified proposer shall provide a breakdown of the costs associated with this report in their price proposal.

LEED™

LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

Rating System

Version 2.0

Including the Project Checklist

June 2001

Disclaimer

The LEED™ Green Building Rating System 2.0 was developed by the U.S. Green Building Council, under contract number DE-FG36-97GO10268, for the U.S. Department of Energy, Energy Efficiency and Renewable Energy, Office of Building Technology, State, and Community Programs, and are intended for use by commercial building project stakeholders or project team members as a guide for green and sustainable design. They were prepared with the assistance and participation of representatives from many organizations. The views and opinions expressed represent general consensus and available information, but unanimous approval by all organizations is not implied. The views and opinions expressed also do not necessarily state or reflect those of the United States government.

Together, the LEED™ documents represent the U.S. Green Building Council's efforts to develop a standard that improves environmental and economic performance of commercial buildings using established and/or advanced industry principles, practices, materials and standards. They are subject to change from time to time in the future.

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Table of Contents

Project Checklist

Sustainable Sites

14 Possible Points

Y			Prereq 1	**Erosion & Sedimentation Control**	Required
Y	?	N	Credit 1	**Site Selection**	1
Y	?	N	Credit 2	**Urban Redevelopment**	1
Y	?	N	Credit 3	**Brownfield Redevelopment**	1
Y	?	N	Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
Y	?	N	Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
Y	?	N	Credit 4.3	**Alternative Transportation**, Alternative Fuel Refueling Stations	1
Y	?	N	Credit 4.4	**Alternative Transportation**, Parking Capacity	1
Y	?	N	Credit 5.1	**Reduced Site Disturbance**, Protect or Restore Open Space	1
Y	?	N	Credit 5.2	**Reduced Site Disturbance**, Development Footprint	1
Y	?	N	Credit 6.1	**Stormwater Management**, Rate or Quantity	1
Y	?	N	Credit 6.2	**Stormwater Management**, Treatment	1
Y	?	N	Credit 7.1	**Landscape & Exterior Design to Reduce Heat Islands**, NonRoof	1
Y	?	N	Credit 7.2	**Landscape & Exterior Design to Reduce Heat Islands**, Roof	1
Y	?	N	Credit 8	**Light Pollution Reduction**	1

Water Efficiency

5 Possible Points

Y	?	N	Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
Y	?	N	Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
Y	?	N	Credit 2	**Innovative Wastewater Technologies**	1
Y	?	N	Credit 3.1	**Water Use Reduction**, 20% Reduction	1
Y	?	N	Credit 3.2	**Water Use Reduction**, 30% Reduction	1

Energy & Atmosphere

17 Possible Points

Y			Prereq 1	**Fundamental Building Systems Commissioning**	Required
Y			Prereq 2	**Minimum Energy Performance**	Required
Y			Prereq 3	**CFC Reduction in HVAC&R Equipment**	Required
Y	?	N	Credit 1.1	**Optimize Energy Performance**, 20% New / 10% Existing	2
Y	?	N	Credit 1.2	**Optimize Energy Performance**, 30% New / 20% Existing	2
Y	?	N	Credit 1.3	**Optimize Energy Performance**, 40% New / 30% Existing	2
Y	?	N	Credit 1.4	**Optimize Energy Performance**, 50% New / 40% Existing	2
Y	?	N	Credit 1.5	**Optimize Energy Performance**, 60% New / 50% Existing	2
Y	?	N	Credit 2.1	**Renewable Energy**, 5%	1
Y	?	N	Credit 2.2	**Renewable Energy**, 10%	1
Y	?	N	Credit 2.3	**Renewable Energy**, 20%	1
Y	?	N	Credit 3	**Additional Commissioning**	1
Y	?	N	Credit 4	**Ozone Depletion**	1
Y	?	N	Credit 5	**Measurement & Verification**	1
Y	?	N	Credit 6	**Green Power**	1

Materials & Resources

13 Possible Points

Y			Prereq 1	**Storage & Collection of Recyclables**	Required
Y	?	N	Credit 1.1	**Building Reuse**, Maintain 75% of Existing Shell	1
Y	?	N	Credit 1.2	**Building Reuse**, Maintain 100% of Shell	1
Y	?	N	Credit 1.3	**Building Reuse**, Maintain 100% Shell & 50% Non-Shell	1
Y	?	N	Credit 2.1	**Construction Waste Management**, Divert 50%	1
Y	?	N	Credit 2.2	**Construction Waste Management**, Divert 75%	1
Y	?	N	Credit 3.1	**Resource Reuse**, Specify 5%	1
Y	?	N	Credit 3.2	**Resource Reuse**, Specify 10%	1
Y	?	N	Credit 4.1	**Recycled Content**, Specify 25%	1
Y	?	N	Credit 4.2	**Recycled Content**, Specify 50%	1
Y	?	N	Credit 5.1	**Local/Regional Materials**, 20% Manufactured Locally	1
Y	?	N	Credit 5.2	**Local/Regional Materials**, of 20% Above, 50% Harvested Locally	1
Y	?	N	Credit 6	**Rapidly Renewable Materials**	1
Y	?	N	Credit 7	**Certified Wood**	1

Indoor Environmental Quality

15 Possible Points

Y			Prereq 1	**Minimum IAQ Performance**	Required
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	Required
Y	?	N	Credit 1	**Carbon Dioxide** (CO_2) **Monitoring**	1
Y	?	N	Credit 2	**Increase Ventilation Effectiveness**	1
Y	?	N	Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
Y	?	N	Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
Y	?	N	Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
Y	?	N	Credit 4.2	**Low-Emitting Materials**, Paints	1
Y	?	N	Credit 4.3	**Low-Emitting Materials**, Carpet	1
Y	?	N	Credit 4.4	**Low-Emitting Materials**, Composite Wood	1
Y	?	N	Credit 5	**Indoor Chemical & Pollutant Source Control**	1
Y	?	N	Credit 6.1	**Controllability of Systems**, Perimeter	1
Y	?	N	Credit 6.2	**Controllability of Systems**, Non-Perimeter	1
Y	?	N	Credit 7.1	**Thermal Comfort**, Comply with ASHRAE 55-1992	1
Y	?	N	Credit 7.2	**Thermal Comfort**, Permanent Monitoring System	1
Y	?	N	Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
Y	?	N	Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1

Innovation & Design Process

5 Possible Points

Y	?	N	Credit 1.1	**Innovation in Design**: Specific Title	1
Y	?	N	Credit 1.2	**Innovation in Design**: Specific Title	1
Y	?	N	Credit 1.3	**Innovation in Design**: Specific Title	1
Y	?	N	Credit 1.4	**Innovation in Design**: Specific Title	1
Y	?	N	Credit 2	**LEED™ Accredited Professional**	1

Project Totals

69 Possible Points

☐ ☐ ☐ **Certified** 26-32 points **Silver** 33-38 points **Gold** 39-51 points **Platinum** 52-69 points

Sustainable Sites

SS | WE | EA | MR | EQ | ID
Prerequisite 1

Prerequisite 1 **Erosion & Sedimentation Control** Required

Intent

Control erosion to reduce negative impacts on water and air quality.

Requirement

Prerequisite 1.0 Design to a site sediment and erosion control plan that conforms to best management practices in the EPA's Storm Water Management for Construction Activities, EPA Document No. EPA-832-R-92-005, Chapter 3, OR local Erosion and Sedimentation Control standards and codes, whichever is more stringent. The plan shall meet the following objectives:

- Prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.

- Prevent sedimentation of storm sewer or receiving streams and/or air pollution with dust and particulate matter.

Technologies & Strategies

Adopt an erosion and sedimentation control plan for the project site during construction. Consider employing strategies such as temporary and permanent seeding, mulching, earth dikes, silt fencing, sediment traps, and sediment basins.

1 Point

Credit 1 **Site Selection**

Intent

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site.

Requirement

Credit 1.0 (1 point) Do not develop buildings on portions of sites that meet any one of the following criteria:

-Prime farmland as defined by the American Farmland Trust

-Land whose elevation is lower than **5 feet above** the elevation of the 100-year flood as defined by FEMA

-Land which provides habitat for any species on the Federal or State threatened or endangered list

-Within **100 feet** of any wetland as defined by 40 CFR, Parts 230-233 and Part 22, OR as defined by local or state rule or law, whichever is more stringent

-Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner (Park Authority projects are exempt)

Technologies & Strategies

During the site selection process, give preference to those sites that do not include sensitive site elements and restricted land types. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck under parking, and sharing facilities with neighbors.

Credit 2 **Urban Redevelopment** 1 Point

Intent

Channel development to urban areas with existing infrastructures, protecting greenfields and preserving habitat and natural resources.

Requirement

Credit 2.0 (1 point) Increase localized density to conform to existing or desired density goals by utilizing sites that are located within an existing minimum development density of **60,000 square feet per acre** (2 story downtown development)

Technologies & Strategies

During the site selection process, give preference to urban sites with high development densities. Quantify the development density of the project as well as the surrounding area.

1 Point

Credit 3 **Brownfield Redevelopment**

Intent

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

Requirement

Credit 3.0 (1 Point) Develop on a site classified as a Brownfield and provide remediation as required by EPA's Sustainable Redevelopment of Brownfields Program requirements

Technologies & Strategies

During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings by selecting a brownfield site. Adopt a site remediation plan and cleanup the site using remediation strategies such as pump-and-treat, bioreactors, land farming, and in-situ remediation.

Credit 4 **Alternative Transportation** 1-4 Points

Intent

Reduce pollution and land development impacts from automobile use.

Requirements

Credit 4.1 (1 point) Locate building within **½ mile** of a commuter rail, light rail or subway station or **¼ mile** of 2 or more bus lines

Credit 4.2 (1 point) Provide suitable means for securing bicycles, with convenient changing/shower facilities for use by cyclists, for **5%** or more of building occupants

Credit 4.3 (1 point) Install alternative-fuel refueling station(s) for **3%** of the total vehicle parking capacity of the site. Liquid or gaseous fueling facilities must be separately ventilated or located outdoors

Credit 4.4 (1 point) Size parking capacity not to exceed minimum local zoning requirements AND provide preferred parking for carpools or van pools capable of serving **5%** of the building occupants, OR, add no new parking for rehabilitation projects AND provide preferred parking for carpools or van pools capable of serving **5%** of the building occupants.

Technologies & Strategies

Perform a transportation survey of future building occupants to identify transportation needs. Site the building near mass transit and design the building with transportation amenities such as bicycle racks and showering/changing facilities, alternative fuel refueling stations, and carpool/ van pool programs. Also consider sharing transportation facilities such as parking lots and refueling stations with neighbors.

1-2 Points

Credit 5 **Reduced Site Disturbance**

Intent

Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.

Requirements

Credit 5.1 (1 point) On greenfield sites, limit site disturbance including earthwork and clearing of vegetation to **40 feet** beyond the building perimeter, **5 feet** beyond primary roadway curbs, walkways, and main utility branch trenches, and **25 feet** beyond pervious paving areas that require additional staging areas in order to limit compaction in the paved area; OR, on previously developed sites, restore a minimum of **50%** of the remaining open area by planting native or adapted vegetation.

Credit 5.2 (1 point) Reduce the development footprint (including building, access roads and parking) to exceed the local zoning's open space requirement for the site by **25%**.

Technologies & Strategies

Perform a site survey to identify site elements and adopt a master plan for development of the project site. Select a suitable building location and design the building with the minimal footprint to minimize site disruption. Strategies include stacking the building program, tuck under parking, and sharing facilities with neighbors. Establish clearly marked construction boundaries to minimize disturbance of existing site and restore previously degraded areas to their natural state.

Credit 6 **Stormwater Management** 1-2 Points

Intent

Limit disruption of natural water flows by minimizing stormwater runoff, increasing on-site infiltration and reducing contaminants.

Requirements

Implement a stormwater management plan that results in:

Credit 6.1 (1 point) **No net increase** in the rate and quantity of stormwater runoff from existing to developed conditions; OR, if existing imperviousness is greater than **50%**, implement a stormwater management plan that results in a **25%** decrease in the rate and quantity of stormwater runoff.

Credit 6.2 (1 point) Treatment systems designed to remove **80%** of the average annual post development total suspended solids (TSS), and **40%** of the average annual post development total phosphorous (TP), by implementing Best Management Practices (BMPs) outlined in EPA's Guidance Specifying Management Measures for Sources of Non-point Pollution in Coastal Waters (EPA 840-B-92-002 1/93).

Technologies & Strategies

Design the project site to maintain natural stormwater flows by promoting infiltration. Specify garden roofs and pervious paving to minimize impervious surfaces. Reuse stormwater volumes generated for non-potable uses such as landscape irrigation, toilet and urinal flushing, and custodial uses. Install mechanical or natural treatment systems such as constructed wetlands, vegetated filter strips, and bioswales to treat stormwater volumes leaving the site.

1-2 Points

Credit 7 **Landscape and Exterior Design to Reduce Heat Islands**

Intent

Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirements

Credit 7.1 (1 point) Provide shade (within 5 years) on at least **30%** of non-roof impervious surface on the site, including parking lots, walkways, plazas, etc., OR, use light-colored/high-albedo materials (reflectance of at least 0.3) for **30%** of the site's non-roof impervious surfaces, OR place a minimum of **50%** of parking space underground OR use open-grid pavement system (net impervious area of LESS than 50%) for a minimum of **50%** of the parking lot area.

Credit 7.2 (1 point) Use ENERGY STAR Roof-compliant, high-reflectance AND high emissivity roofing (initial reflectance of at least 0.65 and three-year-aged reflectance of **at least 0.5** when tested in accordance with ASTM E903 and emissivity of **at least 0.9** when tested in accordance with ASTM 408) for a minimum of **75%** of the roof surface; OR, install a "green" (vegetated) roof for at least **50%** of the roof area.

Technologies & Strategies

Shade constructed surfaces on the site with landscape features and minimize the overall building footprint. Consider replacing constructed surfaces (i.e., roof, roads, sidewalks, etc.) with vegetated surfaces such as garden roofs and open grid paving or specify light-colored, high-albedo materials to reduce the heat absorption.

Credit 8 **Light Pollution Reduction** 1 Point

Intent

Eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments.

Requirement

Credit 8.0 (1 point) Do not exceed Illuminating Engineering Society of North America (IESNA) footcandle level requirements as stated in the Recommended Practice Manual: Lighting for Exterior Environments, AND design interior and exterior lighting such that zero direct-beam illumination leaves the building site.

Technologies & Strategies

Adopt site lighting criteria to maintain safe light levels while avoiding off-site lighting and night sky pollution. Minimize site lighting where possible and model the site lighting using a computer model. Technologies to reduce light pollution include full cutoff luminaries, low-reflectance surfaces, and low-angle spotlights.

SS **WE** EA MR EQ ID

Credit 1

Water Efficiency

1-2 Points

Credit 1 **Water Efficient Landscaping**

Intent

Limit or eliminate the use of potable water for landscape irrigation.

Requirements

Credit 1.1 (1 point) Use high efficiency irrigation technology, OR, use captured rain or recycled site water, to reduce potable water consumption for irrigation by **50%** over conventional means.

Credit 1.2 (1 point) Use only captured rain or recycled site water for an additional **50%** reduction (**100% total reduction**) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems.

Technologies & Strategies

Perform a soil/climate analysis to determine appropriate landscape types and design the landscape with indigenous plants to reduce or eliminate irrigation requirements. Use high efficiency irrigation systems and consider reuse of stormwater or graywater volumes for irrigation.

Credit 2 **Innovative Wastewater Technologies** 1 Point

Intent

Reduce the generation of wastewater and potable water demand, while increasing the local aquifer recharge.

Requirement

Credit 2.0 (1 point) Reduce the use of municipally provided potable water for building sewage conveyance by a minimum of **50%**, OR, treat **100%** of wastewater on site to tertiary standards.

Technologies & Strategies

Estimate the wastewater volumes generated in the building and specify high efficiency fixtures and dry fixtures such as composting toilets and waterless urinals to reduce these volumes. Consider reusing stormwater or graywater for sewage conveyance or on-site wastewater treatment systems (mechanical or natural).

1-2 Points

Credit 3 **Water Use Reduction**

Intent

Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.

Requirement & Submittals

Credit 3.1 (1 point) Employ strategies that in aggregate use **20%** less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.

Credit 3.2 (1 point) Exceed the potable water use reduction by an additional **10%** (**30%** total efficiency increase).

Technologies & Strategies

Estimate the potable and non-potable water needs for the building. Use high efficiency fixtures, dry fixtures such as composting toilets and waterless urinals, and occupant sensors to reduce the potable water demand. Consider reuse of stormwater and graywater for non-potable applications such as toilet and urinal flushing, mechanical systems, and custodial uses.

Energy & Atmosphere

SS | WE | **EA** | MR | EQ | ID

Prerequisite 1

Prerequisite 1 **Fundamental Building Systems Commissioning** Required

Intent

Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended.

Requirement

Prerequisite 1.0 Implement the following fundamental best practice commissioning procedures:

-Engage a commissioning authority

-Review design intent and basis of design documentation

-Include commissioning requirements in the construction documents

-Develop and utilize a commissioning plan

-Verify installation, functional performance, training and documentation

-Complete a commissioning report

Technologies & Strategies

Engage a commissioning authority and adopt a commissioning plan. Include commissioning requirements in bid documents and task the commissioning agent to produce a commissioning report once commissioning activities are completed.

Required

Prerequisite 2 **Minimum Energy Performance**

Intent

Establish the minimum level of energy efficiency for the base building and systems.

Requirement

Prerequisite 2.0 Design to meet building energy efficiency and performance as required by ASHRAE/IESNA 90.1-1999 or the local energy code, whichever is the more stringent.

Technologies & Strategies

Design the building envelope and building systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

Prerequisite 3 **CFC Reduction in HVAC&R Equipment** Required

Intent

Reduce ozone depletion.

Requirement

Prerequisite 3.0 **Zero use** of CFC-based refrigerants in new building HVAC&R base building systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phaseout conversion.

Technologies & Strategies

When reusing existing HVAC systems, conduct an inventory to identify equipment that uses CFC refrigerants and adopt a replacement schedule for these refrigerants. For new buildings, specify new HVAC equipment that uses no CFC refrigerants.

2-10 Points

Credit 1 **Optimize Energy Performance**

Intent

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirements

Reduce design energy cost compared to the energy cost budget for regulated energy components described in the requirements of ASHRAE/IESNA Standard 90.1-1999, as demonstrated by a whole building simulation using the Energy Cost Budget Method described in Section 11:

New Buildings	Existing Buildings	Points
20%	**10%**	2
30%	**20%**	4
40%	**30%**	6
50%	**40%**	8
60%	**50%**	10

Regulated energy components include HVAC systems, building envelope, service hot water systems, lighting and other regulated systems as defined by ASHRAE.

Credit 1.1 (2 points) Reduce design energy cost by **20%** / **10%**.
Credit 1.2 (4 points) Reduce design energy cost by **30%** / **20%**.
Credit 1.3 (6 points) Reduce design energy cost by **40%** / **30%**.
Credit 1.4 (8 points) Reduce design energy cost by **50%** / **40%**.
Credit 1.5 (10 points) Reduce design energy cost by **60%** / **50%**.

Technologies & Strategies

Design the building envelope and building systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost effective energy efficiency measures. Quantify energy performance as compared to a baseline building.

Credit 2 **Renewable Energy** 1-3 Points

Intent

Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use.

Requirements

Supply a net fraction of the building's total energy use (as expressed as a fraction of annual energy cost) through the use of on-site renewable energy systems.

% Total Energy Load Cost in Renewables	Points
5%	1
10%	2
20%	3

Credit 2.1 (1 points) Renewable energy, **5%** contribution

Credit 2.2 (2 points) Renewable energy, **10%** contribution

Credit 2.3 (3 points) Renewable energy, **20%** contribution

Technologies & Strategies

Assess the project for renewable energy potential including solar, wind, geothermal, biomass, hydro, and bio-gas strategies. When applying these strategies, take advantage of net metering with the local utility.

1 Point

Credit 3 **Additional Commissioning**

Intent

Verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended.

Requirement

Credit 3.0 (1 point) In addition to the Fundamental Building Commissioning prerequisite, implement the following additional commissioning tasks:

1. Conduct a focused review of the design prior to the construction documents phase.

2. Conduct a focused review of the Construction Documents when close to completion.

3. Conduct a selective review of contractor submittals of commissioned equipment. (The above three reviews must be performed by a firm other than the designer.)

4. Develop a recommissioning management manual.

5. Have a contract in place for a near-warranty end or post occupancy review.

Technologies & Strategies

Engage the Commissioning Authority early in project design phases. Task the commissioning agent to conduct project reviews before and after construction documents are complete. The Commissioning Agent must also create a recommissioning manual for the building and review the project at near-warranty end.

Credit 4 **Ozone Depletion** 1 Point

Intent

Reduce ozone depletion and support early compliance with the Montreal Protocol.

Requirement

Credit 4.0 (1 point) Install base building level HVAC and refrigeration equipment and fire suppression systems that do not contain HCFC's or Halon.

Technologies & Strategies

When reusing buildings, inventory existing building systems using refrigerants and fire suppression chemicals and replace those that contain HCFCs or halons. For new buildings, specify refrigeration and fire suppression systems that use no HCFCs or halons.

1 Point

Credit 5 **Measurement & Verification**

Intent

Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.

Requirement

Credit 5.0 (1 point) Comply with the long term continuous measurement of performance as stated in Option B: Methods by Technology of the US DOE's International Performance Measurement and Verification Protocol (IPMVP) for the following:

-Lighting systems and controls

-Constant and variable motor loads

-Variable frequency drive (VFD) operation

-Chiller efficiency at variable loads (kW/ton)

-Cooling load

-Air and water economizer and heat recovery cycles

-Air distribution static pressures and ventilation air volumes

-Boiler efficiencies

-Building specific process energy efficiency systems and equipment

-Indoor water risers and outdoor irrigation systems

Technologies & Strategies

Model the energy and water systems to predict savings. Design the building with equipment to measure energy and water performance. Draft a Measurement & Verification Plan to apply during building operation that compares predicted savings to those actually achieved in the field.

Credit 6 **Green Power** 1 Point

Intent

Encourage the development and use of grid-source energy technologies on a net zero pollution basis.

Requirement

Credit 6.0 (1 point) Engage in a two year contract to purchase power generated from renewable sources that meet the Center for Resource Solutions (CRS) Green-e products certification requirements.

Technologies & Strategies

Estimate the energy needs of the building and investigate opportunities to engage in a green power contract with the local utility. Green power is derived from solar, wind, geothermal, biomass, or low-impact hydro sources.

Materials & Resources

Required

Prerequisite 1 **Storage & Collection of Recyclables**

Intent

Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirement

Prerequisite 1.0 Provide an easily accessible area that serves the entire building and is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, and metals.

Technologies & Strategies

Designate an area for recyclable collection and storage that is appropriately sized and located in a convenient area. Identify local waste handlers and buyers for glass, plastic, office paper, newspaper, cardboard, and organic wastes. Instruct occupants on building recycling procedures. Consider employing cardboard balers, aluminum can crushers, recycling chutes, and other waste management technologies to further enhance the recycling program.

Credit 1 **Building Reuse** 1-3 Points

Intent

Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirements

Reuse large portions of existing structures during renovation or redevelopment projects:

Credit 1.1 (1 point) Maintain at least **75%** of existing building structure and shell (exterior skin and framing excluding window assemblies)

Credit 1.2 (1 point) Maintain an additional **25%** (**100%** total) of existing building structure and shell (exterior skin and framing excluding window assemblies)

Credit 1.3 (1 point) Maintain **100%** of existing building structure and shell AND **50%** non-shell (walls, floor coverings, and ceiling systems)

Technologies & Strategies

Consider reuse of existing buildings, including structure, shell, and non-shell elements. Remove elements that pose contamination risk to building occupants and upgrade outdated components such as windows, mechanical systems, and plumbing fixtures. Quantify the extent of building reuse.

1-2 Points

Credit 2 **Construction Waste Management**

Intent

Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process.

Requirements

Develop and implement a waste management plan, quantifying material diversion by weight. (Remember that salvage may include the donation of materials to charitable organizations such as Habitat for Humanity.)

Credit 2.1 (1 point) Recycle and/or salvage at least **50%** (by weight) of construction, demolition, and land clearing waste

Credit 2.2 (1 point) Recycle and/or salvage an additional **25%** (**75%** total by weight) of the construction, demolition, and land clearing debris

Technologies & Strategies

Establish goals for landfill diversion and adopt a construction waste management plan to achieve these goals. Consider recycling land clearing debris, cardboard, metals, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet, and insulation. Designate a specific area on the construction site for recycling and track recycling efforts throughout the construction process. Identify construction haulers and recyclers to handle the designated materials.

Credit 3 **Resource Reuse** 1-2 Points

Intent

Extend the life cycle of targeted building materials by reducing environmental impacts related to materials manufacturing and transport.

Requirements

Credit 3.1 (1 point) Specify salvaged or refurbished materials for **5%** of building materials

Credit 3.2 (1 point) Specify salvaged or refurbished materials for **10%** of building materials

Technologies & Strategies

Identify opportunities to incorporate salvage materials into the building design and research potential material suppliers. Consider salvage materials such as beams and posts, flooring, paneling, doors and frames, cabinetry and furniture, brick, and decorative items.

1-2 Points

Credit 4 **Recycled Content**

Intent

Increase demand for building products that have incorporated recycled content materials, therefore reducing the impacts resulting from the extraction of new materials.

Requirements

Credit 4.1 (1 point) Specify a minimum of **25%** of building materials that contain in aggregate, a minimum weighted average of **20%** post-consumer recycled content material, OR, a minimum weighted average **40%** post-industrial recycled content material.

Credit 4.2 (1 point) Specify an additional **25%** (**50%** total) of building materials that contain in aggregate, a minimum weighted average of **20%** post-consumer recycled content material, OR, a minimum weighted average of **40%** post-industrial recycled content material.

Technologies & Strategies

Establish a project goal for recycled content materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified recycled content materials are installed and quantify the total percentage of recycled content materials installed.

Credit 5 **Local/Regional Materials** 1-2 Points

Intent

Increase demand for building products that are manufactured locally, thereby reducing the environmental impacts resulting from their transportation and supporting the local economy.

Requirements

Credit 5.1 (1 point) Specify a minimum of **20%** of building materials that are manufactured* regionally within a radius of 500 miles.

Credit 5.2 (1 point) Of these regionally manufactured materials, specify a minimum of **50%** that are extracted, harvested, or recovered within 500 miles.

* Manufacturing refers to the *final assembly* of components into the building product that is furnished and installed by the tradesmen. For example, if the hardware comes from Dallas, Texas, the lumber from Vancouver, British Columbia and the joist is assembled in Kent, Washington; then the location of the *final assembly* is Kent, Washington.

Technologies & Strategies

Establish a project goal for locally sourced materials and identify materials and material suppliers that can achieve this goal. During construction, ensure that the specified local materials are installed and quantify the total percentage of local materials installed.

1 Point

Credit 6 **Rapidly Renewable Materials**

Intent

Reduce the use and depletion of finite raw, and long-cycle renewable materials by replacing them with rapidly renewable materials.

Requirement

Credit 6.0 (1 point) Specify rapidly renewable building materials for **5%** of total building materials.

Technologies & Strategies

Establish a project goal for rapidly renewable materials and identify materials and suppliers that can achieve this goal. Consider materials such as bamboo flooring, wool carpet, strawboard, cotton batt insulation, linoleum flooring, poplar OSB, sunflower seed board, and wheatgrass cabinetry. During construction, ensure that the specified rapidly renewable materials are installed and quantify the total percentage of rapidly renewable materials installed.

Credit 7 **Certified Wood** 1 Point

Intent

Encourage environmentally responsible forest management.

Requirement

Credit 7.0 (1 point) Use a minimum of **50%** of wood-based materials certified in accordance with the Forest Stewardship Council Guidelines for wood building components including but not limited to structural framing and general dimensional framing, flooring, finishes, furnishings, and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers.

Technologies & Strategies

Establish a project goal for FSC-certified wood products and identify products and suppliers that can achieve this goal. During construction, ensure that the FSC-certified wood products are installed and quantify the total percentage of FSC-certified wood products installed.

SS | WE | EA | MR | **EQ** | ID

Prerequisite 1

Indoor Environmental Quality

Required

Prerequisite 1 **Minimum IAQ Performance**

Intent

Establish minimum indoor air quality (IAQ) performance to prevent the development of indoor air quality problems in buildings, maintaining the health and well being of the occupants.

Requirement

Prerequisite 1.0 Meet the minimum requirements of voluntary consensus standard ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality and approved Addenda.

Technologies & Strategies

Design the HVAC system to meet the ventilation requirements of the reference standard. Identify potential IAQ problems on the site and locate air intakes away from contaminant sources.

Prerequisite 2 **Environmental Tobacco Smoke** (ETS) **Control**

Required

Intent

Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).

Requirement

Prerequisite 2.0

Zero exposure of nonsmokers to ETS by prohibition of smoking in the building, OR, provide a designated smoking room designed to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room shall be directly exhausted to the outdoors with no recirculation of ETS-containing air to the nonsmoking area of the building, enclosed with impermeable structural deck-to-deck partitions and operated at a negative pressure compared with the surrounding spaces of **at least 7 Pa** (0.03 inches of water gauge).

Performance of smoking rooms shall be verified using tracer gas testing methods as described in the ASHRAE Standard 129-1997. Acceptable exposure in nonsmoking areas is defined as **less than 1%** of the tracer gas concentration in the smoking room detectable in the adjoining nonsmoking areas. Smoking room testing as described in the ASHRAE Standard 129-1997 is required in the contract documents and critical smoking facility systems testing results must be included in the building commissioning plan and report or as a separate document.

Technologies & Strategies

Prohibit smoking in the building or provide separate smoking rooms with isolated ventilation systems.

1 Point

Credit 1 **Carbon Dioxide** (CO_2) **Monitoring**

Intent

Provide capacity for indoor air quality (IAQ) monitoring to sustain long-term occupant health and comfort.

Requirement

Credit 1.0 (1 point) Install a permanent carbon dioxide (CO_2) monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments, AND specify initial operational set point parameters that maintain indoor carbon dioxide levels no higher than outdoor levels by more than 530 parts per million at any time.

Technologies & Strategies

Design the HVAC system with carbon dioxide monitoring sensors and integrate these sensors with the building automation system (BAS).

Credit 2 **Increase Ventilation Effectiveness** 1 Point

Intent

Provide for the effective delivery and mixing of fresh air to support the health, safety, and comfort of building occupants.

Requirement

Credit 2.0 (1 point) For mechanically ventilated buildings, design ventilation systems that result in an air change effectiveness (E) greater than or equal to **0.9** as determined by ASHRAE 129-1997. For naturally ventilated spaces demonstrate a distribution and laminar flow pattern that involves not less than **90%** of the room or zone area in the direction of air flow for at least **95%** of hours of occupancy.

Technologies & Strategies

Design the HVAC system and building envelope to optimize air change effectiveness. Air change effectiveness can be optimized using a variety of ventilation strategies including displacement ventilation, low-velocity ventilation, plug flow ventilation such as underfloor or near-floor delivery, and operable windows. Test the air change effectiveness of the building after construction.

1-2 Points

Credit 3 **Construction IAQ Management Plan**

Intent

Prevent indoor air quality problems resulting from the construction/renovation process, to sustain long-term installer and occupant health and comfort.

Requirements

Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and preoccupancy phases of the building as follows:

Credit 3.1 (1 point) During construction meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, AND protect stored on-site or installed absorptive materials from moisture damage, AND replace all filtration media immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999.

Credit 3.2 (1 point) Conduct a minimum two-week building flush-out with new filtration media at **100%** outside air after construction ends and prior to occupancy, OR conduct a baseline indoor air quality testing procedure consistent with current EPA Protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445.

Technologies & Strategies

Adopt an IAQ management plan to protect the HVAC system during construction, control pollutant sources, and interrupt pathways for contamination. Sequence installation of materials to avoid contamination of absorptive materials such as insulation, carpeting, ceiling tile, and gypsum wallboard. Prior to occupancy, perform a two-week building flushout or test the contaminant levels in the building.

Credit 4 **Low-Emitting Materials** 1-4 Points

Intent

Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort.

Requirements

Meet or exceed VOC limits for adhesives, sealants, paints, composite wood products, and carpet systems as follows:

Credit 4.1 (1 point) Adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District Rule #1168 by, AND all sealants used as a filler must meet or exceed Bay Area Air Quality Management District Reg. 8, Rule 51.

Credit 4.2 (1 point) Paints and coatings must meet or exceed the VOC and chemical component limits of Green Seal requirements.

Credit 4.3 (1 point) Carpet systems must meet or exceed the Carpet and Rug Institute Green Label Indoor Air Quality Test Program.

Credit 4.4 (1 point) Composite wood and agrifiber products must contain no added urea-formaldehyde resins.

Technologies & Strategies

Specify low-VOC materials in construction documents. Ensure that VOC limits are clearly stated in each section where adhesives, sealants, paints, coatings, carpet systems, and composite woods are addressed.

1 Point

Credit 5 **Indoor Chemical & Pollutant Source Control**

Intent

Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

Requirement

Credit 5.0 (1 point) Design to minimize cross-contamination of regularly occupied occupancy areas by chemical pollutants: Employ permanent entry way systems (grills, grates, etc.) to capture dirt, particulates, etc. from entering the building at all high volume entry ways, AND provide areas with structural deck to deck partitions with separate outside exhausting, no air recirculation and negative pressure where chemical use occurs (including housekeeping areas and copying/print rooms), AND provide drains plumbed for appropriate disposal of liquid waste in spaces where water and chemical concentrate mixing occurs.

Technologies & Strategies

Design separate exhaust and plumbing systems for rooms with contaminants to achieve physical isolation from the rest of the building. Install permanent architectural entryway systems such as grills or grates to prevent occupant-borne contaminants from entering the building.

Credit 6 **Controllability of Systems** 1-2 Points

Intent

Provide a high level of individual occupant control of thermal, ventilation, and lighting systems to support optimum health, productivity, and comfort conditions.

Requirements

Credit 6.1 (1 point) Provide a minimum of **one** operable window and **one** lighting control zone **per 200 SF** for all occupied areas **within 15 feet** of the perimeter wall.

Credit 6.2 (1 point) Provide controls for each individual for airflow, temperature, and lighting for **50%** of the non-perimeter, regularly occupied areas.

Technologies & Strategies

Design the building with occupant controls for airflow, temperature, and lighting. Strategies to consider include task lighting, operable windows, and underfloor HVAC systems with individual diffusers.

1-2 Points

Credit 7 **Thermal Comfort**

Intent

Provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants.

Requirements

Credit 7.1 (1 point) Comply with ASHRAE Standard 55-1992, Addenda 1995 for thermal comfort standards including humidity control within established ranges per climate zone.

Credit 7.2 (1 point) Install a permanent temperature and humidity monitoring system configured to provide operators control over thermal comfort performance and effectiveness of humidification and/or dehumidification systems in the building.

Technologies & Strategies

Establish temperature and humidity comfort ranges and design the building envelope and HVAC system to maintain these comfort ranges. Install and maintain a temperature and humidity monitoring system in the building to automatically adjust building conditions as appropriate.

Credit 8 **Daylight & Views** 1-2 Points

Intent

Provide a connection between indoor spaces and outdoor environments through the introduction of sunlight and views into the occupied areas of the building.

Requirement & Submittals

Credit 8.1 (1 point) Achieve a minimum Daylight Factor of **2%** (excluding all direct sunlight penetration) in **75%** of all space occupied for critical visual tasks, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas. Exceptions include those spaces where tasks would be hindered by the use of daylight or where accomplishing the specific tasks within a space would be enhanced by the direct penetration of sunlight.

Credit 8.2 (1 point) Direct line of sight to vision glazing from **90%** of all regularly occupied spaces, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas.

Technologies & Strategies

Design the building to maximize daylighting and view opportunities. Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior shading devices, high performance glazing, and photo-integrated light sensors. Model daylighting strategies with a physical or computer model to assess footcandle levels and daylight factors achieved.

SS | WE | EA | MR | EQ | **ID**

Credit 1

Innovation & Design Process

1-4 Points

Credit 1 **Innovation in Design**

Intent

To provide design teams and projects the opportunity to be awarded points for exceptional performance above requirements set by the LEED Green Building Rating System™ and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System™.

Requirements

Credit 1.1 (1 point) In writing, using the LEED™ Credit Equivalence process, identify the **intent** of the proposed innovation credit, the proposed **requirement** for compliance, the proposed **submittals** to demonstrate compliance, and the **design approach** used to meet the required elements.

Credit 1.2 (1 point) Same as Credit 1.1.

Credit 1.3 (1 point) Same as Credit 1.1.

Credit 1.4 (1 point) Same as Credit 1.1.

Technologies & Strategies

Substantially exceed a LEED™ performance credit such as energy performance or water efficiency. Apply strategies or measures that are not covered by LEED™ such as acoustic performance, education of occupants, community development, or life-cycle analysis of material choices.

Credit 2 **LEED™ Accredited Professional** 1 Point

Intent

To support and encourage the design integration required by a LEED™ Green Building project and to streamline the application and certification process.

Requirement

Credit 2.0 (1 point) At least one principal participant of the project team that has successfully completed the LEED™ Accredited Professional exam.

Technologies & Strategies

Attend a LEED™ Accredited Professional Training Workshop and successfully pass the LEED™ accreditation exam.